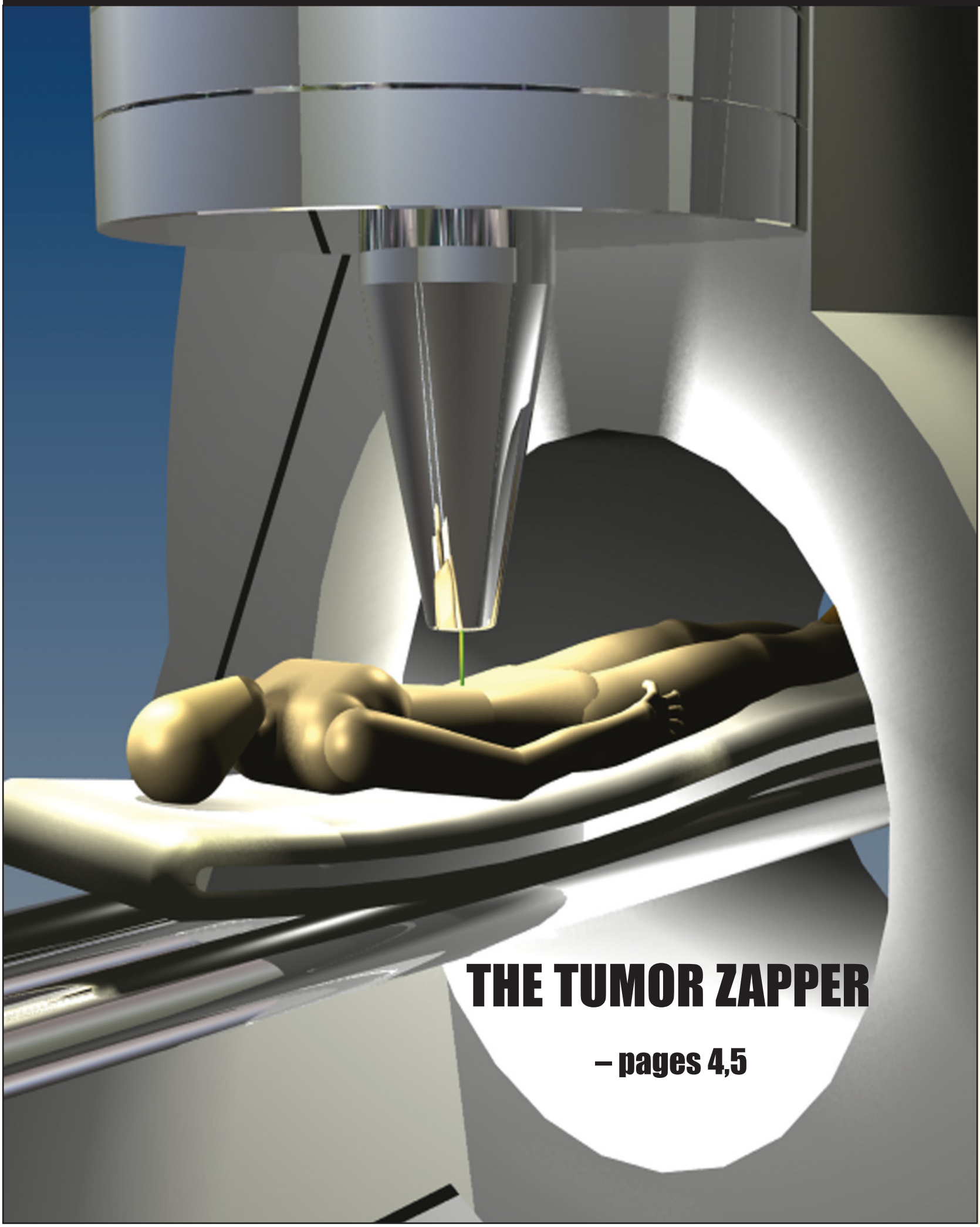
NEWSLINE

Published for the employees of Lawrence Livermore National Laboratory | April 28, 2006 | Vol. 31, No. 9



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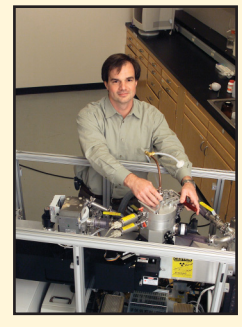


LAB ANNOUNCEMENTS

Miller names new members to management team

Director George Miller has announced the appointment of three key leaders to his senior management team. He also appointed a manager to lead the Laboratory's transition efforts for the upcoming contract competition.

Miller named Dave Leary acting deputy director for Operations, Bruce Warner acting associate director at large and Larry Ferderber acting Director's chief of staff. Barbara Peterson has been named transition manager. The appointments take effect immediately.

Leary had been serving as associate director for Laboratory Services and Director of Safeguards and Security, Warner leaves his former position as principal associate director for the National Ignition Facility (NIF) Programs Directorate, and Ferderber had been serving as director of the Lab's National Security Office. Peterson was the deputy associate director for the Nonproliferation, Arms Control and International Security Directorate.

"These appointments will provide the Laboratory with additional senior support to lead the Laboratory into the future," Miller said. "These individuals bring a strong background in the Laboratory's national security programs, nuclear operations, safety and security. I look forward to working with them and ensuring that we continue to excel in all Laboratory missions."

Dave Leary

Bruce Warner

Larry Ferderber

Barbara Peterson

Dave Leary

As the acting deputy director of Operations, Dave Leary will serve as the key Laboratory executive responsible for all operational aspects and elements of the Laboratory. The deputy director for Operations develops Laboratory policy and assures implementation. Leary replaces Wayne Shotts, who retired from the Laboratory in March.

"I look forward to carrying out the vision and priorities the Director has established, with special attention to safety and security, integrity and ethics," Leary said. "We want the Laboratory to be recognized as an organization that takes care of business by meeting customer commitments, learning from others and quickly fixing and learning from our mistakes. Most importantly, we want to maintain the public trust necessary to meet our national security mission."

Leary joined the Lab in 1973 as an administrative executive in the Security Department, after serving in the U.S. Navy. His career at the Laboratory has spanned numerous management positions, including Security Department head, University of California Chief of Police at LLNL, Innovative Business and Information Services Department head, and National Ignition Facility Programs deputy director for Operations. In 2003, he was appointed associate director of Lab Services and director of Safeguards and Security.

Leary has a master's degree in political science and administration from Washington State University and a bachelor's degree in sociology from Illinois State University. Leary resides in Livermore with his wife, Vicki.

Bruce Warner

As acting associate director at large, Bruce Warner will support the director and deputy directors in the management of Laboratory operations and programs. Warner's focus will be to help seamlessly integrate Laboratory nuclear operations and safety and operational safety with all programmatic activities. Warner will work closely with Leary to assure the Laboratory meets all operational requirements and regulations and is responsive to the National Nuclear Security Administration/Department of Energy, the Laboratory Site Office/NNSA, and the Defense Nuclear Facilities Safety Board.

Warner replaces Miller, who was named interim Lab director in March.

"I am honored to be selected for this position and I look forward to working closely with George, Dave and the rest of the senior management team to maintain excellence at the Laboratory," Warner said. "We have a lot to accomplish in the next few years. My job will be to help ensure we integrate meeting our mission objectives and customer commitments with continued improvement of our operational safety and nuclear operations."

Warner joined the Lab in 1979 as a physicist and has held a number of increasingly important management positions, among them group leader, section leader, associate program leader, deputy program leader and pro-

See **APPOINTMENTS,** *page 8*

Melanoma surveillance program at Laboratory comes to an end

The history of the melanoma experience at LLNL will be the focus of a meeting for all employees at noon, Wednesday, May 3, in the Bldg. 543 auditorium.

Presenters Dan Moore, Jeff Schneider and Mort Mendelsohn will review the melanoma situation at LLNL, discuss melanoma prevention and give an overview of a mortality study of LLNL employees.

The Melanoma Surveillance Program, also known as "Mole Patrol" or "Spot Check" will officially end on April 30. See the March 3 edition of *Newsline*.

The Health Services Department will continue to educate employees about melanoma, other skin cancers and sensible sun habits. Future responsibility for diagnosis and treatment will be returned to employees' personal physicians. Health Services will assist former Mole Patrol patients in transitioning their care to their personal physicians. For additional information, call Health Services at 2-7462.

The Melanoma Surveillance Program began in 1984 after studies showed a threefold increase in melanoma incidence among Lab employees in the mid to late 1970s. During the 1980s, the Lab's melanoma incidence remained stable, while the community and the rest of the country experienced a persistent increase. By the late 1980s the rate of invasive melanoma at the Lab and the surrounding community had equalized. A recently completed study showed that the death rate from melanoma at the Lab was never elevated and was in fact lower than expected during the period 1984 to 1996. Information on the history of cancer surveillance at LLNL can be found on the Web at http://www-r.llnl.gov/healthserv/News/surveillance.html.

Health Services will assist former Mole Patrol patients in transitioning their care to their personal physicians by providing additional copies of skin photographs that patients may no longer have, or initial or replacement pathology reports and other related records. Health Services can also provide a standard letter from Dr. Jeffrey Schneider, Mole Patrol dermatologist, with recommendations for follow-up, to facilitate proper referrals through employees' personal physicians.

These items may be requested by calling Health Services at 2-7462, or by completing a release of health information form available on the Web at http://www-r.llnl.gov/healthserv/ services.html. (Go to: Health Information Forms, Obtain and Release Health Information.) Mail completed forms to Health Services at L-723.

IN PROFILE

Hartouni tells APS homeland security needs physicists

By Stephen Wampler
Newsline staff writer

At a time when more nuclear physicists are needed to develop technologies for homeland security and to meet expected growth in the nuclear power industry, the nation's universities are producing fewer of these researchers.

That's part of the message that Ed Hartouni, a Laboratory physicist, presented last Saturday during the four-day national meeting of the American Physical Society (APS) at the Hyatt Regency Hotel in Dallas.

The number of nuclear physicists produced by U.S. universities has been declining by 3 percent per year for the past decade, dropping to 66 nuclear physicists in 2003, said Hartouni, the leader of the Lab's N Division (Nuclear Particle and Accelerator Physics Division). The average number of nuclear physicists produced annually during the past decade has been 84.

If the current downward trend continues, U.S. universities would be producing about 50 nuclear physicists annually by 2010.

"In that same time period, my colleagues in the Laboratory's Nonproliferation, Homeland and International Security Directorate tell me they're going to want double the current 40 nuclear scientists they have to do more work for the Department of Homeland Security and the Domestic Nuclear Detection Office," Hartouni said.

"Our job is to alert people that there is a diminishing supply and an increasing demand for nuclear physicists. The challenge for LLNL is to make the Laboratory an attractive place for nuclear scientists to come and pursue their research. The challenge for the country is to increase support for this research and to raise the visibility of the field and its importance," he said.

Ed Hartouni

One proposal that could provide a boost for nuclear physics is the Bush Administration's plan, called "The American Competitiveness Initiative," that would double funding for the physical sciences over the next seven years, Hartouni noted.

One of the roles of physicists and other scientists in the post 9/11 era is to aid in detecting weapons of mass destruction as well as the activities leading up to WMD, according to Hartouni.

"The vision of Vannevar Bush, President Franklin Roosevelt's science adviser during World War II, was to have first-rate researchers available to meet important security challenges and national needs," Hartouni said.

Scientific advances, such as the development of the atomic bomb along with the inventions of radar and synthetic materials like nylon, are believed by many to have played an important role in winning World War II.

It is particularly important to fund basic research, in Hartouni's view, since it is extremely difficult to anticipate the nation's future challenges.

"If we have a vital enterprise in basic research, that will provide us with state-of-the-art tools for solving the problems of basic science, and provide us with a range of solutions to national security problems," he said.

As an example of a basic research project that could yield security benefits, Hartouni cited a collaborative project between LLNL and Sandia National Laboratories researchers that was the focus of another presentation at the APS meeting.

Now 3 years old, the project aims to use a three-foot-by-three-foot detector for antineutrinos that would be placed near nuclear power reactors to monitor the production of plutonium in the reactor core.

As part of the project, LLNL researcher Adam Bernstein and Sandia's Nathaniel Bowden have placed a prototype detector at the San Onofre nuclear plant in Southern California to test the concept of antineutrino monitoring.

DDLS examines role of computing in cosmic baryon discovery

Physicist Michael L. Norman of UC San Diego will make a Director's Distinguished Lecturer Series presentation, "The History of Cosmic Baryons: Discoveries Using Advanced Computing," at 3:30 p.m. Tuesday, May 2, in the Bldg. 123 auditorium.

This is the era of the cosmological concordance model — a precise set of parameters that describe the average composition, geometry and expansion rate of the universe. However, recent observational, theoretical and computational advances have shown these parameters to be only 10 percent accurate, and new efforts are under way to increase precision tenfold. Current data indicate that we live in a spatially flat, dark-matter dominated universe whose rate of expansion is accelerating due to an unseen, unknown dark energy field.

Baryons — the stuff of stars, galaxies and us — account for only 4 percent of the universe's total mass-energy inventory, but it is through the astronomical study of baryons that we infer the rest. This talk will highlight the important role that advanced scientific computing has played in arriving at the concordance model, and also the computational discoveries that have been made about the history of cosmic baryons using hydrodynamical cosmological simulations. The talk will conclude with a discussion of the central role that very large-scale simulations of cosmological structure formation will play in deciphering the results of upcoming dark energy surveys.

Michael Norman

Norman is a professor of physics at UC San Diego, where he directs the Laboratory for Computational Astrophysics. Since receiving his Ph.D. from UC Davis in 1980, he has held research staff appointments at the Laboratory, LANL, the Max Planck Institute for Astrophysics in Germany, and most recently at the National Center for Supercomputing Applications at the University of Illinois. Norman's research focus is the computer simulation of astronomical phenomena using the world's most powerful supercomputers.

His computer visualizations have appeared in numerous educational TV shows and films, including "Nova" and the Academy Award-nominated film "Cosmic Voyage."

The presentation will be rebroadcast on Lab TV channel 2 at 10 a.m., noon, 2, 4 and 8 p.m. Thursday, May 11, and 4 a.m. Friday, May 12.

Teaming up to fight cancer

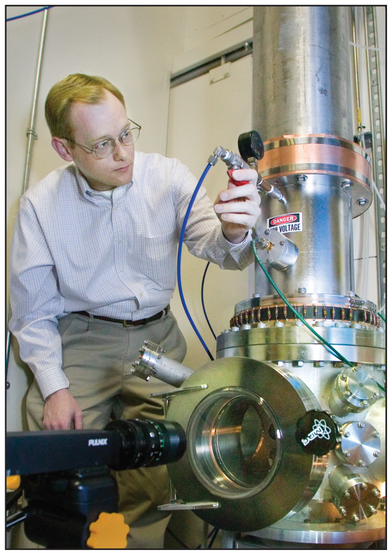
By Charles Osolin
Newsline staff writer

Next-generation radiation therapy at a cancer clinic near you.

That's the goal of an ambitious partnership between the Laboratory and the UC Davis Cancer Center — one of more than two dozen joint research projects involving the two institutions that promises breakthroughs in the detection, treatment and prevention of cancer.

LLNL and UC Davis have committed more than $3 million to develop a compact, relatively inexpensive proton-beam therapy system that can effectively zap tumors with powerful, focused radiation, while causing minimum collateral damage to nearby healthy tissue and organs.

An outgrowth of the Laboratory's weapons research, the technology is being developed by an LLNL team led by George Caporaso of the Physics and Advanced Technologies Directorate. LLNL is currently seeking commercial partners to help construct a compact proton-beam therapy system that could be clinically tested at the UC Davis Cancer Center.



JACQUELINE MCBRIDE/NEWSLINE

John Harris of the Defense Sciences Engineering Division (DSED) prepares the vacuum test chamber used to subject high-gradient insulators (HGIs) to high-voltage electric fields. The HGI is the candidate dielectric wall material that will be used for the beam tube in LLNL's compact proton-beam accelerator. Since it can sustain a very high electric field parallel to its surface, it will be able to provide a high accelerating gradient for the proton beam.

Proton-beam therapy, available in hospitals only since 1990, is expected to become the "next big thing" in radiation treatment for many localized cancers, including those of the head and neck, eye and orbit, prostate, abdomen and lung.

Traditional x-ray and gamma ray therapy can damage the tissue the radiation passes through on the way to a target, limiting the amount that can be delivered to a deep-seated tumor. Protons, however, because of their positive charge and high mass, retain most of their energy until they reach the cancer site. Using sophisticated software algorithms, radiation oncologists can control the penetration depth and shape of the protons in three dimensions, fitting the radiation dose precisely to the shape of the tumor. This allows them to focus more potent doses on the cancer cells without endangering surrounding healthy cells.

Conventional proton therapy systems, however, are large — occupying as much space as a basketball court — and cost as much as $150 to $200 million to build, Caporaso said. "They have to be surrounded by concrete walls to protect against the radiation they generate," he added.

Because of their size and cost, there are only a few proton therapy centers in the United States and only about 20 in the world. Several more are under construction or being planned, but availability of the treatment will remain limited for some time.

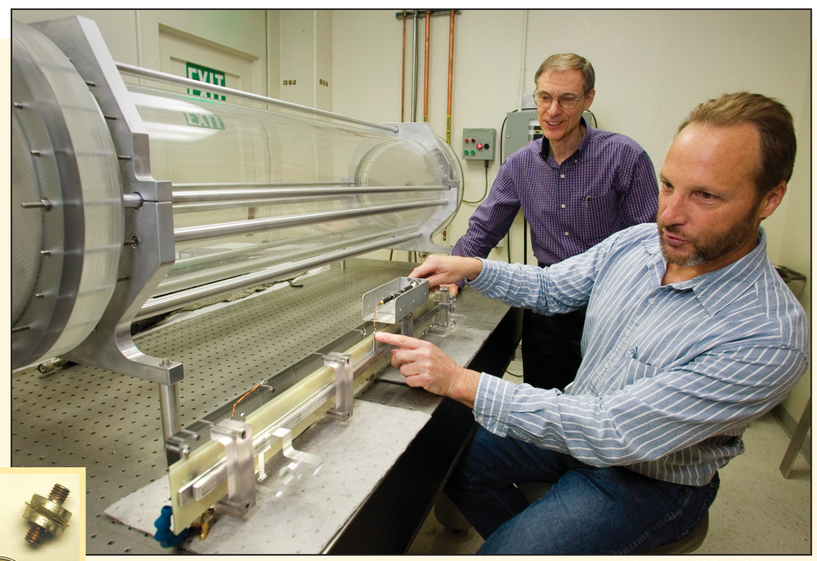
On the other hand, if the huge accelerators could be made compact enough to fit in a single room — a significant technical challenge — and built for less than one-tenth the cost, the therapy could be offered in radiation oncology clinics across the country.

That's where the LLNL-UC Davis Cancer Center partnership comes in. One of the first projects the two institutions launched after they agreed to collaborate in 2000, the compact proton accelerator would use an LLNL-developed technology called the dielectric wall accelerator (DWA) that enables protons to be accelerated to the required energies — as much as 100 million electron volts per meter — without using bending magnets or other techniques that take up space and generate unwanted radiation.

The dielectric wall uses a high-voltage-gradient insulator to handle high electric-field stresses, enabling a proton therapy accelerator to successfully operate without being short-circuited.

Today's hospital proton radiotherapy machines generate from 70 million volts for eye tumors to 250 million volts for tumors deep in the body. A dielectric wall only 2.5 meters long could withstand the 250 million volts required to treat deep-seated tumors. The LLNL researchers have successfully tested a small (3-millimeter-long) dielectric wall sample that withstood an electric field of 100 million volts per meter.

Caporaso said the idea of using the DWA technology for cancer treatment "really started moving when Dennis Matthews (director of the Lab's Center for Biotechnology, Biophysical Sciences and Bioengineering) approached me with the vision that if you could make (a proton accelerator) really, really small, it might be able to go into existing x-ray therapy clinics" in place of conventional X-ray machines.



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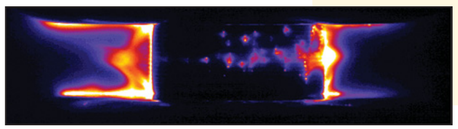


Engineer Mark Rhodes (seated), DSED, and physicist George Caporaso, PAT, adjust a prototype Blumlein transmission-line generator, which will supply power to the high-gradient insulators (HGIs) forming the beam tube dielectric walls in LLNL's compact proton accelerator. Inset: Two first-generation silicon-carbide (SiC) photoconductive switches, composed of 400-micron-thick wafers of SiC with copper electrodes bonded to the top and bottom surfaces. When laser light is introduced into the side of the wafer, the SiC becomes conducting and the assembly acts a closing switch. Ultimately, these switches will be used in Blumleins or similar pulse-forming power supplies. Left: A time-integrated open-shutter photo of an HGI flashing over in a 150,000- to 200,000-volt-per-centimeter electric field. Elevating the flashover threshold of these insulators is key to the success of the project.

"We had been developing the accelerator for a long time for radiography and other defense applications, but Dennis helped us put together an LDRD (Laboratory-Directed Research and Development) proposal that was approved for funding," Caporaso said.

He noted that Ralph DeVere White, director of the UC Davis Cancer Center, "has been a rock-solid, enthusiastic supporter" of the project. "His support has been key to our progress so far."

The project's initial funding, which ended last September, enabled the team to push the system's components to 50 percent of their performance targets. Additional funds from the Lab and UC Davis will "allow us to work toward a subscale (20-centimeter-long) prototype — a kind of a proof of principle device," Caporaso said. "We think we can build enough of the accelerator to demonstrate the operating principles and characteristics within the next 18 months.

"There are a lot of technical challenges remaining," he said. "We'll see if we can push the components to 100 percent over the next year, but we can't test the remaining issues until we build the prototype.

"So it remains to be seen if we can pull it off," Caporaso said. "Progress has been good so far; there are no guarantees, but we're optimistic."

Proton therapy draws on UC history in high energy physics

It's appropriate that a University of California collaboration is at the forefront in working to make proton therapy widely available. The "father" of the technique, Robert R. Wilson, learned his high-energy physics under Ernest O. Lawrence at the Radiation Laboratory at UC Berkeley, forerunner of both Lawrence Livermore and Lawrence Berkeley national laboratories. A member of the Manhattan Project group that developed the atomic bomb, Wilson also headed the team that built Fermi National Accelerator Laboratory outside of Chicago, and in 1946 wrote the seminal paper, "Radiological Use of Fast Protons," that established the fundamental principles of proton therapy. Eight years later, the first patient was treated with protons in a research lab at UC Berkeley. The Berkeley investigators, notably Cornelius A. Tobias, were instrumental in helping to spread the practice of proton and heavy-charged-particle treatment to other research laboratories. The components of the first hospital-based proton treatment system were constructed at Fermilab, and the system treated its first patients at the Proton Treatment Center at Loma Linda University Medical Center in Southern California in 1990.

ON THE COVER: TAn artist's concept for an isocentric proton-beam cancer treatment system. The proton accelerator is the vertical column above the patient. The counter-weighted accelerator revolves around an axis that passes through the center of the treatment area.
CREDIT: STEVE HAWKINS

Cancer center built on collaboration

The UC Davis facility was the first major cancer center to team with a national laboratory, taking advantage of technology developed at LLNL for national and homeland security to carry out innovative anti-cancer research. The collaboration helped the cancer center become a National Cancer Institute-designated center in July 2002; that distinction, along with $14 million in new federal funding through the year 2010, was renewed last summer.

The partnership enables physicians and scientists to work together developing new cancer therapies, detection methods and prevention strategies. About 40 Livermore scientists are actively engaged in cancer research through multi-location appointments with the UC Davis Cancer Center research program. Dennis Matthews (director of the Lab's Center for Biotechnology, Biophysical Sciences and Bioengineering) is associate director of biomedical technology for the cancer center, while Jim Felton of the Lab's Biosciences Directorate, a specialist in cancer causation and prevention, is associate director of cancer control.

Lab technologies tapped for projects

Here is a sampling of joint LLNL-UC Davis Cancer Center projects:

• LLNL physicist Stavros Demos is working with urologist Ralph deVere White, director of the cancer center, on instrumentation to help surgeons detect cancer and assess tissue injuries associated with transplant applications or trauma. Demos has developed optical spectroscopy-based imaging techniques that can detect and image cancer by taking advantage of the different ways light interacts with tissue at the microscopic level: malignant cells interact (scatter and absorb or emit) differently to light than healthy ones, giving rise to new ways to image cancer lesions and cancer cells. In one early application, a new imaging sensor has been built that simultaneously records and displays the spectroscopic cancer-specific image and the conventional color image. The sensor is placed at the end of a cystoscope, a device used to look inside the bladder, to detect bladder cancer without a surgical biopsy.

• Livermore scientists were the first to use accelerator mass spectrometer (AMS) technology for biological and cancer studies. Ultrasensitive pharmacokinetic studies using AMS can analyze how well drugs are absorbed in the body. This helps physicians to fine-tune chemotherapy dosages based on an individual's metabolism, lessening toxicity and improving chemotherapy effectiveness. Earlier this month, LLNL and UC Davis scientists reported the development of a safer, more accurate AMS-based test for pernicious anemia and other conditions related to the poor absorption of vitamin B12. Another AMS study is looking at the causes of cancer in breast cancer cells and mice.

"These studies couldn't be done with any other technology," said Paul Henderson of the Lab's Defense Biology Division.

• Alice Yamada of the Lab's Genome Biology Division is investigating the use of genetic techniques to lower the presence of lipids, such as fats and cholesterol, that are thought to promote the growth of prostate cancer cells. In another prostate cancer research project, Kris Kulp of the Biomedical Division and Ralph and Regina Gandour-Edwards of UC Davis are using time-of-flight secondary ion mass spectrometry to produce images of the chemical composition of single cells. The technique could lead to improved prognosis and treatment of prostate cancer.

• Several joint studies are looking at the relationship between food and cancer, including possible genetic predisposition toward certain cancers among African-Americans and Asian-Americans.

• Biochemist Rod Balhorn, division leader of LLNL's Biomedical Division, and his collaborators at the cancer center are constructing tiny molecules called SHALs (synthetic high-affinity ligands) that bind to unique sites on the surfaces of proteins. Originally conceived as a way to detect and neutralize potential bioterror agents like botulism or anthrax, these "designer molecules" have the potential to selectively bind to tumor cells with particular proteins. Like Trojan horses, SHALs can be designed to carry a radioactive isotope or potent anti-cancer drug. After seeking out and binding to cancer cells, SHALs can unleash their weaponry locally, minimizing the risk to normal cells.

"When I attended meetings with UC Davis Cancer Center researchers," Balhorn said, "I saw the potential of SHALs to fit their needs."

SCIENCE NEWS

Lab team develops 'detect-to-warn' biodetection system

By Charles Osolin
Newsline staff writer

Eric Gard doesn't think you should have to wait two days — or even two minutes — to find out if you've been exposed to anthrax, plague, smallpox, or other deadly pathogens that might be released by terrorists.

Gard, a chemist who leads the Laboratory's Defense Biology Division, has been working for the last six years to develop a system that can detect airborne pathogens and sound a warning in less than a minute.

Such a "detect-to-warn" system is the Holy Grail for scientists working to protect the nation against bioterrorism. "A minute gives people enough time to put on masks, leave the room, hold their breath," Gard says. "The challenge was to actually make a device that could provide answers in less than a minute."

Gard and his team have answered that challenge by developing BAMS — the Bioaerosol Mass Spectrometry system — which won a 2005 R&D 100 award as one of the year's most promising technologies, and is now available for licensing.

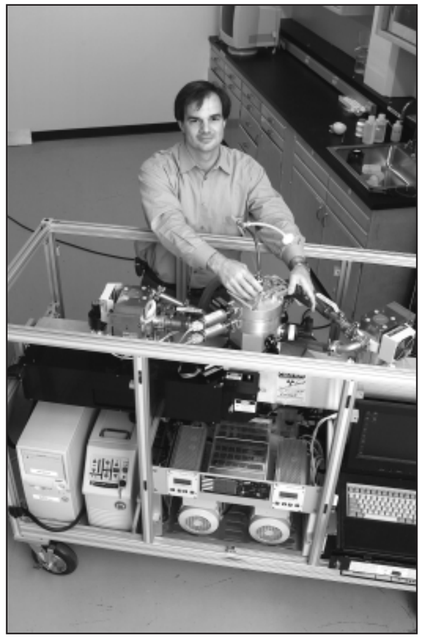
Coming up with techniques for identifying pathogens in such a short time hasn't been easy. An aerosol particle containing a single Bacillus anthracis (anthrax) spore has a mass of about one-trillionth of a gram. The small size of the particles complicates rapid detection because they can be widely dispersed in the atmosphere. Most of the methods currently available to detect anthrax and other airborne nasties take hours, or even days, to yield results, making timely actions difficult if not impossible.

The issue of false alarms is also troublesome; some techniques have a hard time separating benign organisms from those that are very similar but pathogenic. The problem is further complicated by the fact that some pathogens, such as smallpox, are highly contagious, requiring just a few organisms to infect a person. A detection system should ideally be sensitive enough to find and identify a single particle among other naturally occurring background particles, which could be present at concentrations thousands of times higher.

Well before the September 11 terrorist attacks, LLNL had been working on biodetection technologies, and Gard — fresh from his postdoctoral research on the atmospheric chemistry of aerosols at UC Riverside — recognized the need for a fast, accurate detector. "That seemed to be one of the holes in the biodefense strategy," he says.

Having used a technique called mass spectrometry extensively in his Ph.D. and postdoctoral work on aerosols, Gard saw that "mass spectrometry was fast and specific and hadn't really been applied yet to the problem. So I decided to use some of the technology that I had become familiar with to see how I could address the problem."

The result was BAMS. The technique can successfully identify a single airborne particle in about 100 milliseconds. BAMS operates by drawing air through a nozzle and removing nearly all the particles too small to be biological threat agents. The remaining particles — each about 0.5 to 10 micrometers in diameter — are focused into a tight beam. A particle accelerates to a velocity determined by its size and shape, which provides information on its type. The system then probes each particle to see if it contains biological material. For this operation, a pulsed-laser beam excites the particles. Biological materials, if present, emit fluorescent light, which can be recorded by the detector — but nonbiological particles, such as dirt in the atmosphere, do not emit light. This step reduces by 90 percent the number of particles that undergo further analysis.



JOSEPH MARTINEZ/TID

Chemist Eric Gard, who heads the Defense Biology Division in LLNL's Biosciences Directorate, prepares a sample for analysis by the Bio-aerosol Mass Spectrometry (BAMS) system.

In the system's final step, a mass spectrometer identifies the particles. Most mass spectrometers operate by measuring either positive or negative ions. BAMS uses a dual-polarity mass spectrometer, which can process a particle's positive and negative ions at the same time. The positive and negative ions formed are further separated by polarity and mass-to-charge ratio. Real-time pattern-recognition software, developed at Livermore, then analyzes and categorizes the resulting spectra. Many organisms produce a unique signature, which BAMS compares with spectra in a database of organisms. The system can analyze thousands of particles per second, so it can distinguish a very small concentration of biological aerosol from a much larger concentration of background aerosol.

"A lot of data come in very quickly," says Gard. "We need to be accurate, first time out. For instance, a natural insecticide containing spores of Bacillus is similar in chemical structure to the anthrax pathogen. We need to be able to differentiate between them the first time, every time."

To test the system, the Livermore team used *Bacillus subtilis var. niger,* a surrogate of anthrax, and *Bacillus thuringiensis,* an organic pesticide that differs from *Bacillus anthracis* in two short sections of its DNA. BAMS successfully distinguished between the two. The instrument also identified other bacterial cells and spores, biological toxins, and viruses.

In a recent study, the team placed BAMS in the international terminal at San Francisco International Airport to help federal officials determine the cause of false positives registered by other equipment. The instrument also has been used in preliminary studies at Livermore's High-Explosives Test Facility, where BAMS successfully distinguished particles in the atmosphere and surrounding soil from those generated by a detonation of conventional high explosives.

A prototype of the system was taken to Florida in 2001 to help screen the overwhelming number of suspicious powders sent to the Florida Department of Health shortly after the anthrax contamination in U.S. mail. "The Department of Health was using methods that took three days to turn around a single sample," says Gard. "At the time, we wanted to see if we could do the analysis with our system in a few seconds.

"A minute is the time scale in which aerosols move through a neighboring area," he says. "If you can do a detection in less than a minute, that gives you time to be proactive in your response — to limit the number of people exposed, for example by modifying the ventilation system in a building. If you're in the military, it gives you time to put on your protective gear."

The system's ability to analyze particles or cells could benefit other fields besides biological threat detection. Potential applications include medical diagnostics, explosives detection, meteorological studies and nonproliferation programs. For example, the BAMS team hopes to build on the weapons testing research to develop detection capabilities for radioisotopes, which would benefit the nation's nonproliferation programs.

BAMS also has the potential to detect communicable diseases such as severe acute respiratory syndrome (SARS) or tuberculosis, which typically take about a week for clinical detection. Livermore researchers have used tuberculosis surrogates to test the system's ability, and LLNL's Laboratory Directed Research and Development (LDRD) Program is funding an effort to analyze human sputum. By learning which particles occur naturally, these scientists hope to find a method for detecting abnormal cells for various diseases.

"In the future," Gard says, "BAMS could be used as a medical diagnostic to, for instance, track small subpopulations of cancerous cells that deviate from their normal development cycle. As such, BAMS may make far-reaching contributions in the fields of oncology, microbiology and public health."

Livermore's LDRD Program funded the biomedical aspects of the BAMS project, and the Department of Defense's Technical Support Working Group and Defense Advanced Research Projects Agency funded the biodefense efforts.

The current BAMS system is about the size of three lecterns. The Livermore team continues to work on improving the system's capability and on reducing its size to fit various needs.

"When the system is perfected for field use, BAMS could be smaller than a breadbox and detect particles in about a millisecond," says Gard. "A person would breathe into a mask. BAMS could sample the particles from the lungs and then identify and characterize the particles instantaneously."

PEOPLE NEWS

Celebrating Asian Pacific American Heritage Month

May is Asian Pacific American Heritage Month (APAHM). A number of activities are planned for employees at LLNL and Sandia.

May 2
Diversity Talent Show
11:30 a.m.-1 p.m. Sandia- Bldg. 904 auditorium
Open to LLNL employees.

May 3
Keynote Speaker Jan Yanehiro
Noon-1 p.m., Bldg. 481 auditorium, LLNL.
Jan Yanehiro, former host of the local "Evening Magazine" show that aired on KPIX-TV will present "Behind the Scenes of Pacific Fusion TV." Yanehiro is currently the executive producer and correspondent for "Pacific Fusion," a television magazine airing nationally that highlights Asia Pacific people, trends, food and fashion.

May 10
Sook Nyul Choi — "My Writing Odyssey"
Noon-1 p.m., Bldg. 453, Armadillo Room, LLNL.
Sook Nyul Choi is the author of "Year of Impossible Goodbyes" and "Echoes of the White Giraffe." Born in North Korea, Choi emigrated to the U.S. to pursue her college education. She taught in public and parochial schools in New York and Massachusetts. After retiring from her teaching career, she settled in Cambridge, Massachusetts where she currently works as full time writer. Choi's novels which are based upon her own experiences have enriched the lives of young people all over the world.

May 18
Asian Pacific American Heritage Festival
11:30 a.m.-1 p.m., LLNL Employee Picnic Area.
APAC scholarship awards will be presented.
The festival features a variety of ethnic food including: Filipino; Hawaiian; Bangladeshi; Chinese and Korean cuisine. Cultural performances by Na Hoku Mari Kanoelani (Tahitian Dance) and the Nita Nowakowski, Filipino Dance Troupe.

May
Asian language classes (Sandia)
May 9, 11, 16, 18 and 23.
For more information, call Grace Petines at 294-2904.

May 25
APAHM Festival (Sandia)
Food tasting, entertainment and calligraphy
11:30 a.m.-1 p.m.
Bldg. 911 parking lot.

The events are sponsored by Safety and Environmental Protection Directorate (SEP), Work-Life Center, LLNL Asian Pacific American Council (APAC) and Sandia/Livermore Asian Pacific Leadership Committee. For additional information, contact: for LLNL events — Bing Young, 3-0281, Barry Dahling, 4-4882, or the Work-Life Center, 2-9543. For Sandia events, contact Grace Petines, 294-2904.

NEWSLINE

Media & Communications manager: Lynda Seaver, 3-3103
Newsline editor: Don Johnston, 3-4902
Contributing writers: Bob Hirschfeld, 2-2379; Linda Lucchetti, 2-5815; Charles Osolin, 2-8367; David Schwoegler, 2-6900; Anne M. Stark, 2-9799; Stephen Wampler, 3-3107.
For an extended list of Lab beats and contacts, see http://www.llnl.gov/pao/contact/

Newsline is published bi-weekly by the Public Affairs Office, Lawrence Livermore National Laboratory (LLNL), for Laboratory employees and retirees.

Photographer: Jacqueline McBride
Designer: Julie Korhummel, 2-9709
Distribution: Mail Services at LLNL

Public Affairs Office: L-797 (Trailer 6527), LLNL, P.O. Box 808, Livermore, CA 94551-0808
Telephone: (925) 422-4599; Fax: (925) 422-9291
e-mail: newsline@llnl.gov or newsonline@llnl.gov
Web site: http://www.llnl.gov/pao/

In Memoriam

Harry Lee Spears

Harry Lee Spears died March 30 in Corvallis, Ore. He was 90.

Born in Franklin, Ky. to Clarence and Daisy Spears, he married Ethel Cunningham. After her death he married Ruby Vogel.

Spears served in the U.S. Navy between 1934 and 1954. He worked as a mechanical technician at the Laboratory from 1954 until retiring in 1971. He was a member of the Fleet Reserve Association.

He is survived by five children: Harry Richard Spears of Livermore; Jack Dennis Spears of Corvallis, Ore.; Beverali Louise Fifield of Littleton, Colo., Patricia Ann Rankin of Livermore; Jesse Lee Spears of Nevada City, Calif.; 11 grandchildren and nine great-grandchildren.

A memorial service was held in Livermore.

Dorothy Jackson

Dorothy Jackson, a former Lab employee, died April 4 in her Livermore home. Jackson worked in the Health Services Department from 1963 until her retirement in 1996. Prior to retiring, she served as the Health Services' supervisor of nursing for 13 years.

Before joining the Laboratory, she worked at the VA Hospital in Livermore, and at the UC Medical Center, Kaiser Hospital and St. Luke's Hospital, all in San Francisco.

A long-time Livermore resident, Jackson was born in Hawaii and attended the nursing program at the St. Francis Hospital School of Nursing in Honolulu. She continued her education in occupational health throughout her career, and received a bachelor's degree in Health Service Administration in 1986 from St. Mary's College. She received her certification in Occupational Health Nursing (COHN) from the American Board of Occupational Health Nurses in 1984, and was also a certified X-ray technologist and school audiometrist, authorized to administer hearing tests in California schools.

Jackson was an avid scuba diver, and a member of Aqua Tutus Dive Club and then a member of Vaqueros del Mar Dive Club for many years, until her death. She was honored in 2005 with the club's award of Lifetime Membership for her many contributions. Some of her underwater photography has won awards in club competition and appear in the club's annual calendar. She also enjoyed camping, cake decorating and the San Francisco Forty Niners.

She is survived by two children, Valerie and Gary. A celebration of her life and a potluck dinner will be held Friday, May 5, at Robert Livermore Community Center, 4444 East Avenue, Livermore, at 6 p.m.

Erman Edward Morgan

Erman Edward Morgan, a 62-year resident of Livermore and former Lab employee, died on April 14. He was 85.

Morgan was born on Feb. 24, 1921, in Oregon. He graduated from Livermore High School. He worked in the Supply and Distribution Department at the Lab prior to his retirement. He moved to Siskiyou County in 1983.

He was active in youth baseball, Boy Scouts, 4-H, and the local Veterans of Foreign Wars.

He is survived by his wife of 64 years, Phyllis Morgan; son Jerry Morgan of Escalon; daughter Sherry Tillery of Hickman; and five grandchildren.

Services were held.

Donald Frederick Towse

Donald Towse, who worked at the Laboratory during the 1980s doing engineering geology and energy economics studies, including seismic hazard investigations of new facilities, died on April 16 while snorkeling in the ocean near the San Blas Islands northeast of Panama. He was 81.

Towse was born on Dec. 5, 1924, in Somerville, Mass. He received a doctorate degree in geology from the Massachusetts Institute of Technology. During World War II he served in the Navy.

From the late 1950s to the early 1970s, he worked for now-defunct Kaiser Aluminum. He was active in the American Association of Petroleum Geologists.

He is survived by his wife, Marjorie Towse of San Jose; son and daughter-in-law, Lincoln and Joy Towse of Brentwood; daughter, Robin Towse of Soquel; and daughter and son-in-law, Sally Towse and Burt Kendall of San Francisco.

Services were held in Panama. Donations may be made to the Don Towse Memorial Fund, Civil Air Patrol, Squadron 80, 2490 Cunningham Ave., San Jose, 95148.

Laboratory hosts Bay Area Scientific Computing Day

The Laboratory recently hosted the Bay Area Scientific Computing Day, a forum for encouraging collaboration in computational science and engineering with a focus on researchers in their early career.

Steve Ashby, Computation deputy associate director, opened the workshop by emphasizing the importance of high performance computing in advancing science. "Computational mathematicians have played a key role in the success of BlueGene/L as well as other high performance computing systems," Ashby said. "The numerical algorithms they have developed are enabling new applications that provide scientific insights. Workshops like this are important to the vitality of scientific computing."

Steven Lee of LLNL's Center for Applied Scientific Computing (CASC), led the effort to organize this year's workshop. "As a general rule no one with a permanent job is allowed to be a speaker," he said. "This informal gathering is an opportunity for researchers in their early career to discuss their work and exchange ideas with the Bay Area scientific computing community."

The annual workshop rotates among the participating members, which include Lawrence Berkeley National Laboratory, Sandia National Laboratory, UC Berkeley, UC Davis and Stanford University. This year's workshop, held at the Hilton garden Inn in Livermore, set a new record for attendance.

Lee said this year reflected a trend of increased participation by private industry from such companies as Intel and Advanced Micro Systems.

"Young researchers can bring a new perspective to today's computational challenges and it's an important way for research centers such as Livermore to connect with new and talented Bay Area computational scientists," Lee said.

Laboratory computer scientists making presentations at the workshop included talks by Ming Jiang and Rich Vuduc and poster presentations by Kyle Chand and Tzanio Kolev, all of CASC.

APPOINTMENTS

Continued from page 2

gram leader for the Atomic Vapor Laser Isotope Separation Program. Since 1999, he has been the principal deputy associate director and principal deputy project manager for NIF. He is an expert in laser-based separation and holds eight patents in laser technology and laser processing applications.

"I want to thank my colleagues in the NIF Directorate for their friendship and support these past seven years," Warner said.

Warner holds a Ph.D. and master's degree in physics from the University of Colorado. He earned his bachelor's degree in physics from UC San Diego.

Warner lives in Pleasanton with his wife Laurie and son Alex.

Larry Ferderber

The Director's chief of staff is a newly created position within the Senior Management Council and senior executive team. Acting in this role, Ferderber will oversee, on behalf of the director, the coordination, review, research, analysis and implementation of Laboratory programs and policies. Ferderber also will serve as a key adviser to the director to facilitating the long-term strength and vitality of the Laboratory as an institution. The chief of staff also will be a part of the Laboratory's operational leadership team, led by Leary.

"I look forward to working with George and the senior managers to successfully guide this Laboratory through its many challenges, including the pending contract competition and transition process, and emerging with an even stronger reputation as the nation's premier national security laboratory," Ferderber said.

Ferderber joined the Laboratory in 1979 as an engineer. Ferderber has held myriad senior level assignments, including group leader, deputy division leader, division leader, department head and resident manager at LLNL/Nevada Test Site, and principal deputy associate director for Nuclear Test-Experimental Science. Since 2001, he has served as director of the Lab's National Security Office. Since 2004, he has been the UC Acquisition manager for LLNL and from 1993-95 was a legislative fellow for U.S. Sen. Harry Reid of Nevada.

Ferderber earned his master's degree and bachelor's degree, both in electrical engineering, from UC Berkeley. He resides in Pleasanton, with his wife Charlene.

Barbara Peterson

As transition manager, Barbara Peterson will lead the Laboratory's transition efforts for the upcoming contract competition. Peterson will oversee all aspects of the current UC contract closeout and the smooth transition to a new contractor beginning in October 2007.

"Barbara's expertise in project management, her knowledge of both the operational and programmatic areas of the Laboratory and her expertise in industry will be invaluable to us in the months ahead," Miller said. "We have a significant number of specific tasks that must be accomplished over the next 18 months. Barbara will lead our Laboratory efforts and work closely with NNSA and UC to ensure a smooth transition."

While the "transition" process to a new contractor does not formally begin until a contract award is made, advance preparation is required. Peterson will lead a team of Lab employees who will identify the property, facilities and equipment that must be assessed and transferred. She also will ensure that Laboratory contracts, subcontracts, memorandums of understandings (MOU's) and other Laboratory commitments are identified, reviewed and seamlessly transferred.

"I look forward to this challenge," Peterson said. "This is an important time for our Laboratory and my goal is to ensure that the contract transition goes as smoothly as possible and that the workforce is kept informed each step of the way."

Peterson joined LLNL in 1993 after a successful career at TRW. Her positions at LLNL have included Operations manager for O Division, deputy associate director for Operations in Environmental Programs and manager of Finance and Systems for the Atomic Vapor Laser Isotope Separation (AVLIS) project. Since 1999, she has served as deputy associate director for Operations in the NAI Directorate. Peterson has a bachelor's degree in biology from UCLA and a master's of business administration from the University of Southern California.

Changes ahead for *NewsOnLine,* 'MyLLNL' portal elements

Beginning Monday, May 1, *NewsOnLine* will move from its current home on the news tab of the MyLLNL Portal to the front page. The move will make it easier for employees to gain instant access to news and events taking place around the Laboratory.

As part of the move, *NewsOnline* will undergo a redesign, featuring more graphics and video clips and an improved archive system. *NewsOnline* also will change to a daily format.

To make way for *NewsOnLine,* several elements of the portal are being rearranged on the front page as well as on other tabs. Among the changes:

- A new Browse MyLLNL tab with the Browse MyLLNL, Shortcuts, People Lookup, Building Locator, and LLNL Pager portlets
- The My News Links portlet moved to the My Page tab
- The LLNL Weather portlet moved to My Page

For more information, contact Lynda Seaver, 3-3103, Anne Stark, 2-9799, or Don Johnston, 3-4902.

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Newsline
UC-LLNL
PO Box 808, L-797
Livermore, CA 94551-0808